

DETAILED ACTION

Drawings

1. The drawings, filed on 06/16/2006, have been accepted.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Rodney Tullet (Reg. No. 34,034) on 05/06/2011.

The application has been amended as follows:

In the Claims:

1. (Currently Amended) A multi-carrier, multi-cell, wireless communication network, comprising:

a plurality of base stations, each base station associated with one of a plurality of cells, having a transmitter that is synchronized in time and frequency with transmitters in other base stations in the plurality of cells, and configured to transmit cell-specific pilot subcarriers, cell-specific data subcarriers, common pilot subcarriers, and common data subcarriers within a same frequency band that is divided into a plurality of subcarriers, wherein:

the cell-specific pilot subcarriers and the cell-specific data subcarriers contain information concerning a specific cell, wherein at least some of the cell-specific pilot

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subcarriers are not aligned in frequency subcarrier index with cell-specific pilot subcarriers transmitted by the other base stations and at least some of the cell-specific data subcarriers are not aligned in frequency subcarrier index with cell-specific data subcarriers transmitted by the other base stations;

the common pilot subcarriers and the common data subcarriers contain information common to the plurality of cells, wherein the common pilot subcarriers are aligned in frequency subcarrier index with common pilot subcarriers transmitted by the other base stations and the common data subcarriers are aligned in frequency subcarrier index with common data subcarriers transmitted by the other base stations; and a mobile station in one of the plurality of cells, the mobile station configured to receive the cell-specific pilot subcarriers and the cell-specific data subcarriers corresponding to the cell, and the common pilot subcarriers and the common data subcarriers corresponding to the plurality of cells, and, wherein the mobile station is further configured to:

determine cell-specific channel coefficients based on received signals on the cell-specific pilot subcarriers and apply the cell-specific channel coefficients to received signals on the cell-specific data subcarriers to compensate for cell-specific channel effects and to recover cell-specific information carried on the cell-specific data subcarriers, wherein the cell-specific channel corresponds to the channel from the base station in the cell to the mobile station; and

determine composite channel coefficients based on ~~the~~ received signals on the common pilot subcarriers and apply the composite channel coefficients to received

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signals on the common data subcarriers to compensate for composite channel effects and to recover common information carried on the common data subcarriers, wherein the composite channel corresponds to an aggregate of different channels from the plurality of base stations to the mobile station.

31. (Currently Amended) A method of generating transmission subcarriers in a base station in a multi-carrier, multi-cell, wireless communication system comprised of a plurality of mobile stations and base stations in a plurality of cells, the base station associated with a cell in the plurality of cells, including a transmitter that is synchronized in time and frequency with transmitters in other base stations in the system, and configured for generating different types of subcarriers within a same frequency band that is divided into a plurality of subcarriers, the method comprising:

generating common data subcarriers that carry data common to the plurality of cells to mobile stations in the plurality of cells;

generating common pilot subcarriers that possess characteristics common to other common pilot subcarriers generated by the other base stations in the system, the common pilot subcarriers enabling a mobile station in the cell to determine composite channel coefficients and apply the composite channel coefficients to signals on the common data subcarriers received by the mobile station to compensate for composite channel effects and to recover common data carried by the common data subcarriers, wherein the composite channel corresponds to an aggregate of different channels from the plurality of base stations to the mobile station;

generating cell-specific data subcarriers that carry data specific to the cell associated with the base station to individual mobile stations within the cell; and

generating cell-specific pilot subcarriers that possess specific characteristics, in phase, amplitude, or frequency index, corresponding to the cell associated with the base station, the cell-specific pilot subcarriers enabling a mobile station in the cell to determine cell-specific channel coefficients and apply the cell-specific channel coefficients to signals on the cell-specific data subcarriers received by the mobile station to compensate for cell-specific channel effects and recover cell-specific data carried by the cell-specific data subcarriers, wherein the cell-specific channel corresponds to the channel from the base station in the cell to the mobile station; wherein:

the common pilot subcarriers generated by the base station and common pilot subcarriers generated by the other base stations in the system are aligned in frequency subcarrier index, and at least some of the cell-specific pilot subcarriers generated by the base station are not aligned in frequency subcarrier index with cell-specific pilot subcarriers generated by the other base stations; and

the common data subcarriers generated by the base station and common data subcarriers generated by the other base stations in the system are aligned in frequency subcarrier index, and at least some of the cell-specific data subcarriers generated by the base station are not aligned in frequency subcarrier index with cell-specific data subcarriers generated by the other base stations.

41. (Currently Amended) A method of receiving frequency subcarriers by a mobile station in a multi-carrier multi-cell wireless communication system comprised of a plurality of mobile stations and base stations in a plurality of cells, the mobile station associated with a serving base station in a serving cell and including a receiver configured to receive different types of subcarriers within a same frequency band that is divided into a plurality of subcarriers, the method comprising:

receiving common data subcarriers that carry data common to the plurality of cells, the common data subcarriers transmitted by the serving base station being aligned in frequency subcarrier index with common data subcarriers transmitted by other base stations in the system;

receiving common pilot subcarriers that possess characteristics common to the plurality of cells, the common pilot subcarriers transmitted by the serving base station being aligned in frequency subcarrier index with common pilot subcarriers transmitted by the other base stations in the system; receiving cell-specific data subcarriers that carry data specific to the serving cell,

at least some of the cell-specific data subcarriers transmitted by the serving base station being not aligned in frequency subcarrier index with cell-specific data subcarriers transmitted by the other base stations in the system; and

receiving cell-specific pilot subcarriers that possess specific characteristics, in phase, amplitude, or frequency subcarrier index, corresponding to the serving cell, at least some of the cell-specific pilot subcarriers transmitted by the serving base station

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being not aligned in frequency subcarrier index with cell-specific pilot subcarriers transmitted by the other base stations in the system; wherein:

composite channel coefficients are determined based on ~~the~~ received signals on the common pilot subcarriers and applied to ~~the~~ received signals on the common data subcarriers to compensate for composite channel effects and to recover the common data carried on the common data subcarriers, wherein the composite channel corresponds to an aggregate of different

channels from the plurality of base stations to the mobile station; and cell-specific channel coefficients are determined based on ~~the~~ received signals on the cell-specific pilot subcarriers and applied to ~~the~~ received signals on the cell-specific data subcarriers to compensate for cell-specific channel effects and to recover cell-specific data carried on the cell-specific data subcarriers, wherein the cell-specific channel corresponds to the channel from the serving base station to the mobile station.

49. (Currently Amended) A base station in a multi-carrier, multi-cell, wireless communication system comprised of a plurality of mobile stations and base stations in a plurality of cells, the base station associated with a cell in the plurality of cells, including a transmitter that is synchronized in time and frequency with transmitters in other base stations in the system, and configured for transmitting common pilot subcarriers, common data subcarriers, cell-specific pilot subcarriers, and cell-specific data subcarriers within a same frequency band that is divided into a plurality of subcarriers, wherein:

the common pilot subcarriers possess characteristics common to the plurality of cells, and the cell-specific pilot subcarriers possess specific characteristics, in phase, amplitude, or frequency index, corresponding to the cell;

the common pilot subcarriers transmitted by the base station are aligned in frequency subcarrier index with common pilot subcarriers transmitted by the other base stations in the system, and at least some of the cell-specific pilot subcarriers transmitted by the base station are not aligned in frequency subcarrier index with cell-specific pilot subcarriers transmitted by the other base stations in the system;

the common data subcarriers carry data common to the plurality of cells, and the cell-specific data subcarriers carry data specific to the cell; and the common data subcarriers transmitted by the base station are aligned in frequency subcarrier index with common data subcarriers transmitted by the other base stations in the system, and at least some of the cell-specific data subcarriers transmitted by the base station are not aligned in frequency subcarrier index with cell-specific data subcarriers transmitted by the other base stations in the system.

50. (Currently Amended) A mobile station in a multi-carrier, multi-cell, wireless communication system comprised of a plurality of mobile stations and base stations in a plurality of cells, the mobile station including a receiver configured for receiving, within a same frequency band that is divided into a plurality of subcarriers, cell-specific pilot subcarriers and cell-specific data subcarriers transmitted from a serving base station in a serving cell in which the mobile station is associated, and

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common pilot subcarriers and common data subcarriers transmitted from the serving base station and other base stations in the system, wherein:

the common pilot subcarriers possess characteristics common to the plurality of cells, and the cell-specific pilot subcarriers possess specific characteristics, in phase, amplitude, or frequency index, corresponding to the serving cell;

the common pilot subcarriers transmitted by the serving base station are aligned in frequency subcarrier index with common pilot subcarriers transmitted by other base stations in the system, and at least some of the cell-specific pilot subcarriers transmitted by the serving base station are not aligned in frequency subcarrier index with cell-specific pilot subcarriers transmitted by the other base stations in the system;

the common data subcarriers carry data common to the plurality of cells, and the cell-specific data subcarriers carry data specific to the serving cell; and the common data subcarriers transmitted by the serving base station are aligned in frequency subcarrier index with common data subcarriers transmitted by the other base stations in the system, and at least some of the cell-specific data subcarriers transmitted by the serving base station are not aligned in frequency subcarrier index with cell-specific data subcarriers transmitted by the other base stations.

Allowable Subject Matter

3. In view of amended claims and further search, Claims 1-9, 11, and 31-50 are allowed.

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4. The following is an examiner's statement of reasons for allowance: Claims 1-9, 11, and 31-50 are allowed for the reasons as set forth in applicant's response filed on 04/27/2011.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BABAR SARWAR whose telephone number is (571)270-5584. The examiner can normally be reached on MONDAY TO FRIDAY 08:00 AM -04:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KAMRAN AFSHAR can be reached on (571)272-7796. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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